AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of producing a device with a ferroelectric thin film on a first substrate, the method comprising the steps of:

providing a ferroelectric crystal,

~~of~~ irradiating a first surface of said ferroelectric crystal with ions so that a damaged layer is created underneath said first surface,

~~of~~ bonding a block of material including said first substrate to said ferroelectric crystal to create a bonded element, wherein an interface is formed between said first surface and a second surface of said block, and

~~of~~ heating the bonded element and separating it at the damaged layer, so that a ferroelectric crystal layer remains supported by the first substrate.

2. (Currently Amended) A method according to claim 1, further comprising the steps of:~~,~~

prior to bonding the block to ~~the~~a second substrate, fabricating said block by providing the first substrate, and

applying a layer of electrically conducting material to ~~it~~the first substrate.

3. (Original) A method according to claim 2, wherein the fabricating of said block further comprises the step of applying a dielectric layer to said layer of

electrically conducting material, said dielectric layer forming said second surface.

4. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, wherein the ferroelectric crystal is a $LiNbO_3$ crystal.

5. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, wherein said block comprises a second ferroelectric crystal, said second ferroelectric crystal preferably being a $LiNbO_3$ crystal.

6. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, wherein material at said second surface has an index of refraction that is lower than the index of refraction of said ferroelectric crystal by at least 10%, and wherein said material is preferably a silicon oxide.

7. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, further comprising the step of laterally structuring the ferroelectric crystal layer so that a waveguide core of a 3d waveguide is formed.

8. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, further comprising the step of chemical mechanical polishing of the first substrate prior to the bonding.

9. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, comprising the step of annealing and/or polishing the ferroelectric crystal layer after the separating step.

10. (Currently Amended) A method according to ~~any one of the previous claims~~claim 1, wherein the ferroelectric crystal is a bulk ferroelectric crystal.

11. (Currently Amended) An optical or optoelectronic or electromechanical or piezoelectric or pyroelectric or memory device comprising:

a first substrate and ferroelectric crystal material supported by said substrate, wherein said ferroelectric crystal material has been transferred as a ferroelectric layer from a ferroelectric crystal using the method according to ~~any one of the previous claims~~claim 1.

12. (Currently Amended) A device according to claim 11, further comprising an electrode being formed in a layer parallel to the ferroelectric crystal layer and being positioned between the first substrate and the ferroelectric crystal layer.

13. (Original) A device according to claim 12, wherein said electrode is arranged between said first substrate and a dielectric layer on which the ferroelectric crystal layer is arranged.

14. (Currently Amended) A device according to ~~any one of claims 11 to 13~~claim 11, being an optical wavelength selective filter comprising two waveguide branches, each branch being coupled to at least one micro-resonator, wherein waveguide cores of the waveguide branches and the micro-resonators comprise said ferroelectric material.

15. (Currently Amended) A device according to claim 12~~, or 13~~ being a Mach-Zehnder modulator comprising two waveguide branches, cores of which ~~are~~ comprise said ferroelectric material, and wherein at least one branch comprises an electrode for influencing the index of refraction of the ferroelectric material.

16. (Currently Amended) A device according to claim 12~~, or 13~~ being a wavelength

selective switch with two waveguide branches, each branch being coupled to at least one micro-resonator, wherein waveguide cores of the waveguide branches and the micro-resonators comprise said ferroelectric material, and wherein at least one branch and/or a micro-resonator coupled to ~~it~~said wavelength selective switch comprises an electrode for influencing the index of refraction of the ferroelectric material.

17. (Currently Amended) A device according to claim 16, comprising a plurality of micro-resonator pairs or groups of micro-resonator pairs, each micro-resonator pair comprising a micro-resonator coupled to one waveguide branch and one micro-resonator coupled to the other waveguide branch, each micro-resonator pair or group of micro-resonator pairs comprising an electrode for influencing the index of refraction of the ferroelectric material, the different electrodes being separated from each other.

18. (Original) A dynamic wavelength router for routing optical signals of different wavelengths comprising a plurality of devices according to claim 17 connected to each other network-like.

19. (Currently Amended) A device according to claim 12, ~~or 13~~ being a switchable out-coupler comprising an electrode for applying a periodic field to the ferroelectric material.

20. (Currently Amended) A device according to claim 12, ~~or 13~~ being a pyroelectric sensor or a piezoelectric device.

21. (Currently Amended) A device according to claim 12, ~~or 13~~ being a ferroelectric

memory device.

22. (Currently Amended) An parametric amplifier or frequency doubling device, fabricated using a method according to ~~any one of claims 1 to 10~~claim 1, comprising a waveguide formed by a layered structure and a cladding, wherein the layered structure comprises at least two layers of a ferroelectric material arranged adjacent to each other in a layer sequence, wherein the spontaneous polarization of neighboring layers of the layer sequence differs.

23. (Original) A parametric amplifier or frequency doubling device according to claim 22, wherein the layered structure comprises exactly three layers of one ferroelectric material.

24. (Currently Amended) A parametric amplifier or frequency doubling device according to claim 22 ~~or 23~~, wherein the spontaneous polarization of neighboring layers in the layer sequence is opposed.

25. (Currently Amended) A parametric amplifier or frequency doubling device according to ~~any one of claims 22 to 24~~claim 22, wherein the thickness of one layer of the layered structure is correlated to the waveguide configuration in a manner such that a higher than fundamental mode has a node close to an interface between two adjacent layers.

26. (Currently Amended) A parametric amplifier or frequency doubling device according to ~~any one of the claims 22 to 25~~claim 22, wherein the dimensions of the waveguide are chosen such that the waveguide contribution to ~~the~~a chromatic dispersion and ~~the~~a chromatic dispersion contributed by the

ferroelectric material compensate each other in a certain wavelength range.

27. (Currently Amended) A parametric amplifier, fabricated using a method according to ~~any one of claims 1 to 10~~claim 1, comprising a waveguide formed by a layered structure and a cladding and further comprising electrodes with a periodic pattern, so ~~the~~a core waveguide may be poled periodically to achieve quasi phase matching for frequency doubling or parametric amplification.